

WHAT IS CLAIMED IS:

1. A recording and reproducing device which includes a light source, focusing means for converging and projecting a laser beam which was emitted from the light source on a disk, and rotation driving means for rotating the disk,

said recording and reproducing device comprising:

a stabilizing board, provided between the disk and the focusing means, which is moved with the focusing means.

2. The recording and reproducing device as set forth in claim 1, wherein said stabilizing board is transparent.

3. The recording and reproducing device as set forth in claim 1, wherein said stabilizing board has an opening in an optical path of the laser beam so as to allow passage of the laser beam.

4. The recording and reproducing device as set forth in claim 1, wherein said disk is flexible.

5. A recording and reproducing device which records and reproduces information by projecting a

10034865 122701

laser beam on a disk being rotated,

said recording and reproducing device comprising:

a stabilizing slider which is disposed to face the disk and is supported to oscillate, a surface of said stabilizing slider facing the disk being flat.

6. The recording and reproducing device as set forth in claim 5, further comprising:

a stabilizing board which is disposed to face said stabilizing slider via the disk.

7. The recording and reproducing device as set forth in claim 6, wherein said stabilizing board is a slider which is supported to oscillate and has a flat surface facing said stabilizing slider.

8. The recording and reproducing device as set forth in claim 7, wherein said slider is a focusing slider which includes focusing means for focusing a laser beam on the disk.

9. The recording and reproducing device as set forth in claim 8, wherein said focusing slider includes a first lens and a second lens which are provided as the focusing means, the first lens and the second lens

10034855 122701

being separated from each other by a predetermined distance, and said focusing slider further includes a piezoelectric element layer for controlling the distance between the first lens and the second lens.

10. The recording and reproducing device as set forth in claim 5, wherein said stabilizing slider includes a magnetic field generating element for generating a magnetic field.

11. The recording and reproducing device as set forth in claim 6, wherein said stabilizing board includes an air-core coil for generating a magnetic field.

12. The recording and reproducing device as set forth in claim 11, wherein said stabilizing slider includes a soft magnetic material.

13. The recording and reproducing device as set forth in claim 5, wherein said disk is flexible.

14. A recording and reproducing device which includes a light source, focusing means for converging and projecting a laser beam which was emitted from the

10034865 .122701

light source on a disk, and rotation driving means for rotating the disk,

said recording and reproducing device comprising:

a first stabilizing board, provided between the disk and the focusing means, which is moved with the focusing means; and

a slider which is disposed to face said first stabilizing board via the disk and is supported to oscillate, a surface of said slider facing the disk being flat.

15. The recording and reproducing device as set forth in claim 14, wherein said first stabilizing board is fixed to the focusing means via an elastic member having elasticity.

16. The recording and reproducing device as set forth in claim 14, wherein the focusing means is a complex lens which is composed of at least two lenses.

17. The recording and reproducing device as set forth in claim 14, wherein said slider includes a magnetic field generating element for generating a magnetic field.

10034865-122701

18. The recording and reproducing device as set forth in claim 14, wherein said first stabilizing board is transparent.

19. The recording and reproducing device as set forth in claim 14, further comprising:

a second stabilizing board which is disposed to face the disk, and to create a space of reduced pressure between the disk and said second stabilizing board when the disk is rotating.

20. The recording and reproducing device as set forth in claim 19, wherein said second stabilizing board has an opening which is used to position said slider or said first stabilizing board in a vicinity of the disk when recording or reproducing information.

21. The recording and reproducing device as set forth in claim 14, wherein the disk is flexible.

22. A recording and reproducing device which includes an optical pickup for recording and reproducing information by projecting a laser beam on a disk being rotated,

said recording and reproducing device comprising:

10034865 122701

a stabilizing board, provided with the optical pickup, which is disposed to face the disk when the disk is rotating.

23. The recording and reproducing device as set forth in claim 22, further comprising a stabilizing slider which is disposed to face said stabilizing board via the disk and is supported to oscillate, said stabilizing slider having a flat surface facing said stabilizing board.

24. The recording and reproducing device as set forth in claim 23, wherein said stabilizing board is a slider which is supported to oscillate and has a flat surface facing said stabilizing slider.

25. The recording and reproducing device as set forth in claim 23, wherein said stabilizing slider includes a magnetic field generating element for generating a magnetic field.

26. The recording and reproducing device as set forth in claim 22, wherein said stabilizing board includes an air-core coil for generating a magnetic field.

10034865 122701

27. The recording and reproducing device as set forth in claim 26, wherein said stabilizing slider includes a soft magnetic material.

28. The recording and reproducing device as set forth in claim 22, wherein the disk is flexible.

29. A recording and reproducing device which includes a light source, focusing means for converging and projecting a laser beam which was emitted from the light source on a disk, and rotation driving means for rotating the disk,

said recording and reproducing device comprising:

a first stabilizing board, provided between the disk and the focusing means, which is moved with the focusing means; and

a slider which is disposed to face said first stabilizing board via the disk and is supported to oscillate, a surface of said slider facing the disk being flat,

wherein said first stabilizing board has an opening in an optical path of the laser beam so as to allow passage of the laser beam.

30. The recording and reproducing device as set

10034865 122701

forth in claim 29, wherein said opening is in a form of a bowl on the optical path of the laser beam passing through said first stabilizing board.

31. The recording and reproducing device as set forth in claim 29, wherein the disk is flexible.

32. A disk cartridge containing a disk used in a recording and reproducing device which records and reproduces information by projecting a laser beam on the disk being rotated and which includes a stabilizing slider which is disposed to face the disk and supported to oscillate, a surface of the stabilizing slider facing the disk being flat, the disk being exposed from the disk cartridge when recording or reproducing information,

said disk cartridge comprising inner wall surfaces which define a stabilizing board for creating a space of reduced pressure between the disk and the inner wall surfaces during rotation of the disk.

33. The disk cartridge as set forth in claim 32, wherein a distance between the disk and each of the inner wall surfaces of the disk cartridge is not less than 10  $\mu\text{m}$  and not more than 200  $\mu\text{m}$ .

10034865 "122701



34. A disk cartridge containing a disk in a cartridge used in a recording and reproducing device which includes a light source, focusing means for converging and projecting a laser beam which was emitted from the light source on a disk, and rotation driving means for rotating the disk, the recording and reproducing device further including a first stabilizing board, disposed between the disk and the focusing means, which is moved with the focusing means, a slider which is disposed to face the first stabilizing board via the disk and supported to oscillate, a surface of the slider facing the first stabilizing board being flat, and a second stabilizing board which is disposed to face the disk and to create a space of reduced pressure between the disk and the second stabilizing board when the disk is rotating, the disk being exposed from the cartridge when recording or reproducing information,

wherein the second stabilizing board of the disk is defined by one of inner wall surfaces of the cartridge.

35. A disk cartridge containing a disk in a cartridge, the disk being exposed from the cartridge when recording or reproducing information,

10034865 .122701

said disk cartridge comprising a second stabilizing board which is defined by inner wall surfaces of the cartridge and disposed to face the disk and to create a space of reduced pressure between the disk and the second stabilizing board when the disk is rotating.

36. The disk cartridge as set forth in claim 35, wherein a distance between the disk and each of the inner wall surfaces of the cartridge is not less than 10  $\mu\text{m}$  and not more than 200  $\mu\text{m}$ .

37. The disk cartridge as set forth in claim 35, wherein the inner wall surfaces of the cartridge have an opening through which the disk is exposed when recording or reproducing information, and which is used to position a first stabilizing board and a slider in a vicinity of the disk, the first stabilizing board being disposed between focusing means and the disk used in a recording and reproducing device, the first stabilizing board being moved with the focusing means, and the slider being disposed to face the first stabilizing board via the disk and supported to oscillate, a surface of the slider facing the first stabilizing board being flat.

10034865 .122701

38. A disk cartridge containing a disk in a cartridge used in a recording and reproducing device which includes an optical pickup for recording and reproducing information by projecting a laser beam on a disk being rotated, the recording and reproducing device further including a stabilizing board, provided with the optical pickup, which is disposed to face the disk when the disk is rotating, the disk being exposed from the cartridge when recording or reproducing information,

wherein inner wall surfaces of the cartridge define a stabilizing board for creating a space of reduced pressure between the disk and the inner wall surfaces when the disk is rotating.

39. The disk cartridge as set forth in claim 38, wherein a distance between the disk and each of the inner wall surfaces of the cartridge is not less than 10  $\mu\text{m}$  and not more than 200  $\mu\text{m}$ .

40. An optical disk device which records and reproduces information with respect to an optical disk, comprising:

rotation driving means for rotating an optical disk;

10034865 122701

a focusing unit for focusing light from a light source on the optical disk;

a support member for supporting the focusing unit; and

a rotation stabilizing board, fixed to said support member so as to be disposed between said focusing unit with said support member and the optical disk, for stabilizing rotation of the optical disk.

41. The optical disk device as set forth in claim 40, wherein the optical disk is contained in an optical disk cartridge, and the optical disk cartridge has an inner wall which defines a rotation stabilizing surface, opposite said rotation stabilizing board with respect to the optical disk, for further stabilizing rotation of the optical disk.

42. The optical disk device as set forth in claim 40, wherein said rotation stabilizing board is fixed to the support member of the focusing unit via an elastic body.

43. The optical disk device as set forth in claim 40, wherein said rotation stabilizing board is made of a material which essentially allows passage of light

10034865-122701

focused by said focusing unit.

44. The optical disk device as set forth in claim 40, wherein said rotation stabilizing board is made of a material which does not allow passage of light focused by said focusing unit, and has a light passage opening which allows passage of the light.

45. The optical disk cartridge as set forth in claim 41, wherein said optical disk cartridge includes a first opening through which said rotation driving means enters the optical disk cartridge, and a second opening through which at least said focusing unit enters the optical disk cartridge.

46. The optical disk device as set forth in claim 45, wherein said optical disk cartridge has a first entire stabilizing surface for the optical disk over an entire surface of one of inner wall surfaces opposite a surface provided with the second opening.

47. The optical disk device as set forth in claim 45, wherein said optical disk cartridge has a first entire stabilizing surface for the optical disk over an entire surface of one of inner wall surfaces opposite a

10034865-122701

surface provided with the second opening, and a second entire stabilizing surface for the optical disk over an entire surface of another inner wall surface provided with the second opening.

48. The optical disk device as set forth in claim 47, wherein a distance between the optical disk and the first entire stabilizing surface is not less than 10  $\mu\text{m}$  and not more than 200  $\mu\text{m}$ .

49. The optical disk device as set forth in claim 47, wherein a distance between the optical disk and the second entire stabilizing surface is not less than 10  $\mu\text{m}$  and not more than 200  $\mu\text{m}$ .

50. The optical disk device as set forth in claim 40, wherein the disk is flexible.

51. An optical disk device which records and reproduces information with respect to an optical disk, comprising:

rotation driving means for rotating an optical disk;

a focusing unit for focusing light from a light source on the optical disk;

10034855-122701

a support member for supporting the focusing unit;  
and

a transparent rotation stabilizing board, fixed to the support member so as to be disposed between the focusing unit with the support member and the optical disk, for stabilizing rotation of the optical disk,

wherein said focusing unit includes a first objective lens and a second objective lens, the first objective lens being fixed to the support member via the transparent rotation stabilizing board, and the second objective lens being fixed to the support member via an actuator for driving the lenses.

52. The optical disk device as set forth in claim 51, further comprising a rotation stabilizing board, disposed opposite said transparent rotation stabilizing board with respect to the optical disk, for further stabilizing rotation of the optical disk.

53. The optical disk device as set forth in claim 52, wherein said rotation stabilizing board is a slider.

54. The optical disk device as set forth in claim 51, wherein said transparent rotation stabilizing board

10034855 .122701

is fixed to the support member of the focusing unit via an elastic body.

55. The optical disk device as set forth in claim 51, wherein:

the actuator for driving the lenses includes a focusing actuator for driving the lenses for focusing, and a tracking actuator for tracking, and

the support member includes an intermediate support member for supporting the first objective lens via the transparent rotation stabilizing board and for supporting the second objective lens via the focusing actuator, and a main support member for supporting the intermediate support member via the tracking actuator.

56. The optical disk device as set forth in claim 53, wherein said slider includes a magnetic field generating element therein.

57. The optical disk device as set forth in claim 51, further comprising an entire rotation stabilizing board, disposed opposite the transparent rotation stabilizing board with respect to the optical disk, for further stabilizing rotation of the optical disk.

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58. The optical disk device as set forth in claim 51, wherein the optical disk is contained in an optical disk cartridge, and the optical disk cartridge has an inner wall which defines an entire rotation stabilizing surface, opposite said transparent rotation stabilizing board with respect to the optical disk, for further stabilizing rotation of the optical disk.

59. The optical disk device as set forth in claim 58, wherein said optical disk cartridge has an inner wall which defines another entire rotation stabilizing board, on the side of the transparent rotation stabilizing board with respect to the optical disk, for further stabilizing rotation of the optical disk.

60. The optical disk device as set forth in claim 59, wherein a distance between the optical disk and each of the inner wall surfaces is not less than 10  $\mu\text{m}$  and not more than 200  $\mu\text{m}$ .

61. The optical disk device as set forth in claim 51, wherein the optical disk is flexible.

10034865 "122701